of Micronesia. He recognizes 37 genera, one of which (*Rhynchophreatia*) is new, and describes 38 new species. We are only beginning to realize the wealth of orchids in the tropics.

HUGHES[12] has published a revision of the Australian species of *Stipa*, recognizing 40 species, 17 of which are described as new. This is in striking contrast with the 15 species recognized in the *Flora Australiensis*, especially since only 5 species of the 40 characterized are based on material unknown to BENTHAM.

The current numbers of *Notizblatt* (Bot. Gart. Berlin-Dahlem) contain numerous taxonomic contributions, dealing with the flora of South America, Africa, and the East Indies. The new genera described are as follows: *Tetradema* (Gesneriaceae) by SCHLECHTER (**7**:15–18. 1920), from the East Indies and the Philippines; *Peekelia* (Leguminosae) by HARMS (**7**:26, 27. 1920), from New Guinea; *Chelyocarpus* (Palmaceae) by DAMMER (**7**:44–51. 1921), from Brazil; *Paraphyadanthe* (Flacourtiaceae) by MILDBRAED (**7**:399–405. 1921), from Africa; *Cheilanthopsis* (Polypodiaceae) by HIERONYMUS (**7**:406–409. 1920), from Burma; *Afrolicania* (Rosaceae) by MILDBRAED (**7**:483–485. 1921), from Africa; *Neozenkerina* (Scrophulariaceae) by MILDBRAED (**7**:491–493. 1921), from Africa; *Stenodrepanum* (Leguminosae) by HARMS (**7**:400–501. 1921). KRÄNZLIN (**7**:412–451. 1920) also describes 44 new species of Orchidaceae from Columbia, this being only the first paper of a series.—J. M. C.

Origin of Hawaiian flora.—Because of its notable endemism, the flora of the Hawaiian Islands has always been of fascinating interest to plant geographers. CAMPBELL[13] in some recent studies of this flora regards the Hawaiian problem as the most important distributional problem that exists anywhere. HILLEBRAND, and perhaps most investigators, have held that the Hawaiian flora has always been isolated, the islands having been thrown up from great depths by volcanic action. Recent studies by PILSBRY on the Hawaiian land snails have shown noteworthy Malaysian affinities, and now CAMPBELL finds similar evidences from the plants. The liverworts and filmy ferns in particular are unsuited to long overseas transportation, and must have existed in Hawaii since it was connected with other lands. The relationship of these plants is much closer to the flora of Malaysia and Australasia than to America. Of 40 species of pteridophytes found elsewhere, 38 are common to Australasia or Malaysia, and only two are common to America. Fifty-one genera of spermatophytes are common to Australasia or Malaysia, and only six are common to America. The endemic genera are more closely related to Asia

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[12] HUGHES, D. K., A revision of the Australian species of *Stipa*. Kew Bull. no. 1. pp. 30. 1921.

[13] CAMPBELL, D. H., The origin of the Hawaiian flora. Mem. Torr. Bot. Club **17**:90–96. 1918.

———, The derivation of the flora of Hawaii. Leland Stanford Junior Univ. Publ. I. pp. 34. 1919.

or the south Pacific than to America. The American elements that are present are accounted for partly through introduction by winds or migratory birds, and partly as a residue of once more widespread forms that are now extinct except in Hawaii and America. The absence of conifers may similarly be explained by extinction, if they were ever present, or by the absence of suitable soil conditions. The almost complete absence, for example, of granitic or calcareous soils might well explain certain absences. It is noted also that great ocean deeps separate Hawaii from America, whereas it is much shallower between Hawaii and the Orient. It is concluded, therefore, that the Hawaiian flora has been derived for the most part from the southern Pacific region, and that the Hawaiian Islands are a remnant of a northeastern extension of some large land mass, once connected closely with south Pacific lands.—H. C. COWLES.

Studies of cambium.—BAILEY,[14] in a third paper on cambium, has made what he calls a cytological "reconnaissance." In the preceding paper, reviewed in this journal,[15] he called attention to the size variations of cambial initials, and to the unusual opportunity offered by the cambium for the study of a number of fundamental cytological problems. In this preliminary study he has reached the following conclusions. The initials of the cambium, which may attain a length of more than 9000 μ, are uninucleate, and the "working distance" of their nuclei must extend in some cases for a distance of several thousand microns. The nucleo-cytoplasmic ratio may be relatively constant in ray initials, but varies enormously in fusiform initials. All the cambium initials of *Pinus Strobus* contain the diploid number of chromosomes. Small ray initials may contain as large chromosomes as adjacent fusiform initials with a volume 200–1000 times as large. Fusiform initials, which are frequently several hundred times as long as they are wide, divide longitudinally by an extraordinary extension of the cell plate. The various types of cell plate formation described by various cytologists are believed to be merely different phases or stages of a single general type of cytokinesis. These glimpses would seem to justify the writer in his belief that the cambium well deserves intensive cytological investigation.—J. M. C.

Economic plants of Philippines.—In an illustrated report BROWN[16] gives a series of descriptions of the indigenous food-producing plants of the Philippines. Many will be surprised to find the statement that the edible wild plants of these islands are less abundant, more inaccessible, and inferior in

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[14] BAILEY, I. W., The cambium and its derivative tissues. III. A reconnaissance of cytological phenomena in the cambium. Amer. Jour. Bot. 7:417–434. *pls. 26–29.* 1920.

[15] BOT. GAZ. 71:408. 1921.

[16] BROWN, WM. H., Wild food plants of the Philippines. Phil. Dept. Agric. and Nat. Res., Bur. For. Bull. 21:1–165. *figs. 81.* 1920.